

1 1. A composition comprising ex vivo expanded cells that selectively damage
2 tumor-associated vasculature compared to normal vasculature

1 2. The composition of claim 1 wherein the selectivity is 2-fold.

2 3. The composition of claim 1 wherein the selectivity is at least 5-fold.

1 4. The composition of claim 1 wherein the selectivity is at least 100-fold.

1 5. The composition of claim 1 wherein at least 2% of the ex vivo expanded cells
2 selectively kill tumor-associated vascular endothelial cells compared vascular endothelial
3 cells associated with normal tissues.

1 6. The composition of claim 5 wherein at least 5% of the ex vivo expanded cells
2 selectively kill tumor-associated vascular endothelial cells compared vascular endothelial
3 cells associated with normal tissues.

1 7. The composition of claim 6 wherein at least 10% of the ex vivo expanded cells
2 selectively kill tumor-associated vascular endothelial cells compared vascular endothelial
3 cells associated with normal tissues.

1 8. The composition of claim 6 wherein at least 50% of the ex vivo expanded cells
2 selectively kill tumor-associated vascular endothelial cells compared vascular endothelial
3 cells associated with normal tissues.

1 9. The composition of claim 1 wherein the ex vivo expanded cells are T cells.

1 10. The composition of claim 1 wherein the ex vivo expanded cells are NK cells.

1 11. The composition of claim 1 wherein the ex vivo expanded cells are CIK cells.

1 12. The composition of claim 1 wherein the ex vivo expanded cells recognize an
2 antigen present on tumor vasculature that is not present in normal vasculature.

1 13. The composition of claim 1 wherein the ex vivo expanded cells recognize an
2 antigen expressed during neoangiogenesis

1 14. The composition of claim 12 or 13 wherein the antigen recognition is non-
2 classical MHC restricted.

1 15. The composition of claim 12 or 13 wherein the antigen recognition is MHC-
2 independent.

1 16. The composition of claim 1 wherein the ex vivo expanded cells express a
2 cell-surface receptor which recognizes heat shock protein 47.

1 17. The composition of claim 1 wherein the ex vivo expanded cells express a
2 cell-surface receptor which recognizes HLA.

1 18. The composition of claim 1 wherein the ex vivo expanded cells express a
2 cell-surface receptor which recognizes IL-12 receptor or a part thereof.

1 19. The composition of claim 1 wherein the ex vivo expanded cells express a
2 cell-surface receptor which recognizes a heat shock protein.

1 20. The composition of claim 1 wherein the ex vivo expanded cells comprise
2 cells expressing both CD3 and CD56.

1 21. The composition of claim 1 wherein the ex vivo expanded cells comprise
2 cells that kill tumor cells.

me 17 22. The composition of claim 1 further comprising a chemotherapeutic
2 compound.

1 23. The composition of claim 1 further comprising an agent which links the ex
2 vivo expanded cells to a selected compound.

1 24. The composition of claim 1 wherein the agent binds to the ex vivo expanded
2 cell non-covalently.

1 25. The composition of claim 24 wherein the agent is a bi-specific antibody.

1 26. The composition of claim 24 wherein the agent comprises at least two
2 covalently bound antibodies.

1 27. The composition of claim 25 wherein the bi-specific antibody binds to the
2 selected compound.

1 28. The composition of claim 24 wherein the agent comprises an antibody which
2 binds to the ex vivo expanded cells.

1 29. The composition of claim 28 wherein the selected compound is covalently
2 bound to the antibody.

1 30. The composition of claim 28 wherein the selected compound is non-
2 covalently bound to the antibody.

1 31. The composition of claim 23 wherein the selected compound is selected from
2 the group consisting of: a toxin, an antibody, a detectably labeled molecule, an immuno-
3 modulator, and a radioactive compound.

1 32. The composition of claim 1 further comprising an immuno-modulator.

1 33. The composition of claim 1 further comprising a chemotherapeutic
2 compound.

1 34. A method for treating a patient suffering from a cancer, the method
2 comprising administering to a patient the composition of any of claims 1, wherein the ex
3 vivo expanded cells are autologous to the patient.

1 35. The method of claim 34 wherein the cancer stimulates neo-angiogenesis.

1 36. The method of claim 34 wherein the tumor is a solid tumor.

1 37. The method of claim 34 wherein the ex vivo cells are capable of undergoing
2 replication in culture.

1 38. The method of claim 34 wherein the composition is administered without co-
2 administration of a cytokine.

1 39. The method of claim 34 wherein the composition is not administered within
2 five days of the administration of a cytokine.

1 40. The method of claim 34 wherein at least 10^5 of the ex vivo expanded cells are
2 administered in a given day.

3 41. The method of claim 34 where the composition is administered at least two
4 times within 7 days.

1 42. The method of claim 34 where the composition is administered at least two
2 times within 30 days.

1 43. The method of claim 34 wherein the patient is suffering from a cancer
2 selected from a stage 1 cancer, stage 2 cancer, stage 3 cancer, or a stage 4 cancer.

1 44. The method of claim 34 wherein the patient is suffering from a cancer
2 selected from a low grade cancer, an intermediate grade cancer, and a high grade cancer.

1 ⁴⁵
~~43.~~ A method for preparing a composition comprising ex vivo expanded cells that
2 selectively kill tumor-associated vascular endothelial cells compared vascular endothelial
3 cells associated with normal tissues, the method comprising:

- 4 a) providing a composition comprising NK cells; and
5 b) enriching the composition for cells that express a receptor for heat shock
6 protein 47.

1 ⁴⁶
~~44.~~ A method for preparing a composition comprising ex vivo expanded cells
2 that selectively kill tumor-associated vascular endothelial cells compared vascular
3 endothelial cells associated with normal tissues, the method comprising:

- 4 a) providing a composition comprising NK cells; and
5 b) enriching the composition for cells that express a receptor for HLA.

1 ⁴⁷
~~45.~~ A method for preparing a composition comprising ex vivo expanded cells that
2 selectively kill tumor-associated vascular endothelial cells compared vascular endothelial
3 cells associated with normal tissues, the method comprising:

- 4 a) providing a composition comprising NK cells; and
5 b) enriching the composition for cells that express a receptor for interleukin-12.

1 ⁴⁸
~~46.~~ A method for ex vivo expansion of EAT cells comprising culturing pre-cursor
2 in agitated medium.

1 ⁴⁹ ^{✓48}
~~47.~~ The method of claim ~~46~~ wherein the cells are grown in a membrane
2 enclosure.

1 ⁵⁰ ^{✓48}
~~48.~~ The method of claim ~~46~~ wherein the cells are grown in bioreactor.

1 ⁵¹~~49~~. The method of claim ^{✓ 48}~~46~~ wherein the cells a shipped to location other than the
2 site of expansion.

52
1 50. The method of claim 34 wherein treatment comprises outpatient treatment.

1 ⁵³
2 ~~51~~. The method of claim 34 wherein the patient is suffering from a non-
malignant disease.

1 ⁵⁴ 52. The method of claim 34 wherein the patient is a cancer survivor.

1 ⁵⁵~~53~~. The method of claim 34 wherein the patient is healthy.

1 ⁵⁶~~54~~. The method of claim 34 wherein the patient is at increased risk for cancer.

1 ⁵⁷
2 ~~55~~. A method for treating a patient comprising administering to a patient the
3 composition of any of claims 1, wherein the ex vivo expanded cells are allogenic to the
patient.

1 58
56. The method of claim 57 wherein the cells are immortalized.

1 59
2 57. The composition of claim 1 wherein the ex vivo expanded cells harbor a
stable transgene comprising a regulable suicide gene.